The following letter, dated November 15, 1901, addressed by the secretary of Lloyd's, London, to the Chief of the United States Weather Bureau at Washington, indicates the degree of interest that is being taken in the Weather Bureau warnings by representatives of the commercial and shipping interests of the North Atlantic.

I am instructed to express to you the best thanks of the Committee of Lloyd's for the forecasts of bad weather in the Atlantic with which you have been so good as to allow them to be favored, and I am desired to convey to you the congratulations of my Committee on the infallibility of the predictions that have been supplied by these forecasts.

The most important storm of the month along the Atlantic seaboard of the United States began the night of the 23d and continued during the 24th.

The following special bulletin, issued from Washington on the 25th, indicates the general character of this storm, and of the action taken to issue warnings in connection therewith:

The severe storm that visited the Middle Atlantic and New England coasts Saturday night and Sunday, and which continued on the New England coast Monday, was most severely felt from New York to Boston, where maximum wind velocities ranging from 60 to 66 miles an hour from the northeast were reported Sunday.

Timely warning was given by the Weather Bureau of the approach of this storm, and before 1 p. m. Saturday, coast and shipping interests from Maine to Florida had been informed regarding its position, character, and course, and storm warnings had been ordered from Hatteras to Eastport. Monday morning Lloyd's, London, were cabled from Washington that a severe storm would pass over Newfoundland Monday night, moving northeast.

Commenting upon the storm, an article in the Boston Journal, of November 25, 1901, reads as follows:

AMPLE WARNING WAS GIVEN.

The Weather Bureau, whose timely warning has saved uncounted ships and their crews from the storm, predicts that the disturbance will pass away to-day, and that Tuesday morning the weather will be fair.

There had been plenty of warning of this storm. Early Saturday the storm signals had been hoisted on the Federal Building, and they were kept flying, and every good sailor saw that it was wise to have everything snug and safe aloft and alow, so the storm found nothing in the harbor to meddle with. As the wind kept coming fresher out of the north, some of the big vessels in the stream put down two hooks into the mud, and when the wind was blowing its strongest, 60 miles an hour, in the afternoon of yesterday, all the vessels were riding as prettily as if it were nothing but the ebbing tide which had slewed them round so that their bowsprits were writing words on the sky toward East Boston.

It was a coincidence of comment that this storm had come in the same way and at the same time as that terrible storm of 1898, when the steamer *Portland* was lost. This time, however, the lesson did not require a second teaching.

Several storms of seasonal intensity crossed the Great Lakes. Ample warnings were issued in advance of these storms and shipmasters generally profited by them.

A number of severe storms were reported on the British Columbia and Alaska coasts, and on the 28th a severe storm, for which warnings were displayed on the 27th, visited the middle California coast.

The first important cold wave of the month appeared over the British Northwest Territory on the morning of the 2d, extended over districts lying between the Mississippi River and the Rocky Mountains during the 3d, and caused heavy frosts in the Ohio Valley and the interior of the Southern States during the night of the 4th. The second cold wave of the month appeared in the extreme Northwest on the 6th, and extended southeast and east with rapidly diminishing intensity during the 7th and 8th.

Frost was reported in the Southern States on several dates, and in each instance its occurrence was anticipated in the forecasts or by special frost warnings.

The snowfalls of the month were unusually heavy for the season in the mountain districts of the Middle and North Atlantic States. The first heavy snowstorm occurred on the 13th and 14th, and extended from northern New England and the interior of New York to western Virginia. On the 19th, snow was reported in northern Georgia, and on the 24th heavy snow fell in the middle Allegheny Mountain districts.

Heavy rains from the 23d to 26th caused a marked rise in the head waters of the Ohio River. The value of the River and Flood Service of the Weather Bureau in forecasting marked changes in river stages is indicated by the following extract from the Pittsburg Despatch of November 27, 1901:

VALUABLE TO COAL COMPANIES.

That the value and importance of the local weather office service to the river interests can not be fully calculated was demonstrated on this rise.

Mr. Ridgeway had the information in advance of anyone else that a coal-boat stage of water would reach the upper Ohio River by Monday afternoon. At least thirty hours in advance of the crest of the rise he had officially notified the different coal interests here of the coming water. He predicted that there would be 12 feet of water, and his prediction has been verified within a few inches.

This valuable information from the Weather Bureau enabled the coal companies to get their fleets in readiness, and by the time shipping water came the steamers all had steam up and only awaited the signal to cut loose. As a result of the notice, many millions of bushels of coal have gone down the Ohio, and more will go to-day. A delay of twenty-four hours, and the indefinite information which would have been received through the regular channels of the coal companies would have broken the back of this great shipment. The great importance of the Weather Bureau to Pittsburg and its varied interests can not be calculated in dollars and cents, but an idea can be gained of its value through the fact that the notice, by being sent out so far in advance of the rise, gave employment to over five hundred men.

BOSTON FORECAST DISTRICT.

The chief meteorological feature of the month was a severe storm on the 24–25th. This storm was of southern origin, and it attained great force along the New England coast. At Block Island the wind reached a maximum velocity of 80 miles an hour. The highest velocity at Boston was 60 miles an hour, and a mean velocity of 44 miles an hour was maintained for a period of six hours. It is estimated that the storm was the most severe since the hurricane of November, 1898. Ample warning was given of the approach of the disturbance, and it is known that much benefit resulted to shipping and other interests. The press of the city commended the Bureau for the excellence of the service rendered. The Boston Evening Transcript of November 25 stated editorially as follows:

Whatever may be the record of the Weather Bureau with respect to the more vaguely defined forecasts, it has rarely made mistakes regarding big events. It sent out warnings previous to all our recent great storms, and had the people of Galveston acted promptly on its suggestions the disaster would have been mitigated somewhat. The warning sent out Saturday and the manner of its reception shows that we have come to entertain a wise respect for scientific forecasting.

The daily forecasts of the month were generally correct and often brought forth favorable comment from interested persons.—*J. W. Smith, Forecast Official.*

CHICAGO FORECAST DISTRICT.

A cold wave developed in the extreme Northwest on the 2d and gradually overspread the entire district. A second cold wave appeared in the Northwest on the 6th and moved eastward over the district, with a considerable fall in temperature. Cold-wave warnings were ordered in advance at all stations where marked temperature falls occurred.

A storm of considerable intensity reached the lakes on the 3d, and a second, with increased intensity, on the 6th and 7th. Storm warnings were ordered at all ports in advance of these storms. Warnings were ordered on the 11th for a storm of considerable force, which moved eastward across the lakes.

Storm, northeast warnings, were ordered for the northern Lake region on the evening of the 21st, and were extended to the balance of the upper lakes on the morning of the 22d. While some wrecks occurred during the month, and a few lives were lost, the warnings were generally heeded by vessel men, and sheltered harbors were sought.—*H. J. Cox, Professor.*

NEW ORLEANS FORECAST DISTRICT.

Frost, or special temperature warnings, were issued for some portion of this district on the 3d, 4th, 7th, 12th, 15th, 16th, 19th, 26th, and 28th. Frost occurred in each instance, and all frosts and freezes that occurred were forecast. The temperature warnings issued for the sugar interests on the 15th and 16th were fully verified. These warnings enabled all those who had not saved their seed cane to complete that work.

There were no well-marked storms during the month.—*I. M. Cline, Forecast Official.*

DENVER FORECAST DISTRICT.

The month was unusually fine, even in the mountain districts, where local storms so frequently occur at this season. Cold-wave warnings were issued on the morning of the 2d for Wyoming and northeastern Colorado, and these were verified except in the immediate vicinity of Denver.—*F. H. Brandenburg, Forecast Official.*

SAN FRANCISCO FORECAST DISTRICT.

The present month may be considered a wet November, the rainfall amounting to 3.48 inches, with ten rainy days and three days on which a trace of rain fell. The first week was marked by a pressure distribution approaching that of a typical dry month. This period marked the close of the raisin drying season. During this period no showers were forecast which did not occur, and no unnecessary warnings were issued.

On the morning of the 9th rain was forecast for southern California, and the forecast was verified. The disturbed condition on the California coast, which began on the 19th was anticipated. The p. m. map of the 18th showed the lowest pressure to be on the coast of northern California; the pressure and temperature change maps indicated on the morning of the 19th that the disturbance had moved northward, and on the 20th that it was in British Columbia and Alberta. Heavy rain which occurred in the vicinity of San Francisco on the night of the 20th was accurately forecast. The end of the month was marked by rainy weather, with conditions favorable for tule fog in the valleys and along the coasts.—*Alexander G. McAdie, Professor.*

PORTLAND, OREG., FORECAST DISTRICT.

The centers of storms, which controlled the weather in this district, passed farther north than usual; consequently the month was mild, and in most sections there was a deficiency of precipitation.

Many severe storms occurred on the Alaska and British Columbia coasts, and some of these storms passed far enough south to cause southerly gales along the Oregon and Washington coasts. Timely warnings were issued for all storms which visited the north Pacific coast, and shipping interests were well advised of their character and progress.—*E. A. Beals, Section Director.*

HAVANA, CUBA, FORECAST DISTRICT.

No important disturbance appeared in the West Indies during the month.—*Montrose W. Hayes, Section Director.*

AREAS OF HIGH AND LOW PRESSURE.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	2, p.m.	54	114	5, a.m.	48	85	1,325	2.5	530	22.1
II	4, a.m.	42	93	7, a.m.	42	76	1,050	3.0	350	14.6
III	5, p.m.	45	123	8, p.m.	38	80	2,350	3.0	783	32.6
IV	8, a.m.	54	114	{11, a.m.	43	74	2,550	3.0	850	35.4
				{11, a.m.	35	75	2,450	3.0	817	34.0
V	10, p.m.	45	123	13, a.m.	33	94	1,800	2.5	720	30.0
VI	13, a.m.	53	108	18, a.m.	48	85	1,300	†3.0	433	18.0
VII	{17, p.m.	47	123	22, a.m.	36	75	{3,250	4.5	722	30.1
	{18, p.m.	50	108				{2,125	3.5	607	25.3
VIII	20, p.m.	53	105	24, p.m.	46	60	2,220	4.0	555	23.1
IX	23, a.m.	30	99	25, p.m.	25	82	1,400	2.5	560	23.3
X	23, p.m.	53	108	27, p.m.	48	85	1,125	†2.0	562	23.4
XI	24, p.m.	43	109	27, a.m.	35	85	1,425	2.5	570	23.8
XII	26, a.m.	50	100	29, a.m.	34	78	1,750	3.0	583	24.3
Sums							26,120	42.0	8,642	360.0
Mean of 14 paths							1,866		617	25.7
Mean of 42.0 days									620	25.8
Low areas.										
I	1, a.m.	51	114	3, p.m.	47	85	1,525	2.5	610	25.4
II	2, a.m.	38	108	{3, p.m.	36	85	1,075	1.5	717	29.9
				{4, a.m.	28	82	1,425	2.0	712	29.7
III	5, a.m.	50	120	9, a.m.	48	54	3,425	4.0	856	35.7
IV	7, a.m.	53	117	11, a.m.	48	54	2,975	4.0	744	31.0
V	8, a.m.	33	105	9, a.m.	26	97	950	1.0	950	39.6
VI	9, a.m.	50	120	18, a.m.	48	54	4,450	9.0	494	20.6
VII	14, p.m.	41	126	17, p.m.	53	105	1,500	3.0	500	20.8
VIII	16, a.m.	43	105	19, p.m.	28	82	2,050	3.5	586	24.4
IX	18, p.m.	41	126	20, a.m.	48	125	600	1.5	400	16.7
X	20, p.m.	48	110	26, p.m.	46	60	{3,525	6.0	588	24.5
							{3,950	6.0	658	27.4
XI	22, a.m.	50	120	24, a.m.	49	90	1,400	2.0	700	29.2
XII	26, a.m.	53	121	29, p.m.	42	74	2,600	3.0	867	36.1
XIII	29, a.m.	53	121	*3, a.m.	48	54	3,200	4.0	800	33.3
				*5, a.m.	48	54	4,725	6.0	788	32.8
Sums							39,375	59.0	10,970	457.1
Mean of 16 paths							2,461		686	28.6
Mean of 59.0 days									667	27.8

*December. †Stationary for 2 days.

For graphic presentation of the movements of these highs and lows see Charts I and II.—*H. C. Frankenfield, Forecast Official.*

RIVERS AND FLOODS.

Low water stages continued during the month in the Mississippi and Missouri rivers. In the Ohio low stages continued until the last week of the month, when a steady, though not heavy, three days rainfall caused a moderate rise in the upper river and tributaries, the crest passing Portsmouth, Ohio, on the 30th. This rise was of the greatest value to all river interests. Thirty hours advance notice of the coming tide was given by the Weather Bureau Official at Pittsburg, and every effort was made by those affected to take immediate advantage of the situation. The coal industry was the one most benefited, since about five million bushels of coal were started on their journey to the mouth of the Mississippi River.

The rivers of the remaining districts of the country pre-